Data Quality and the Information Management Authority (IMA)

August 2006

►Data Quality

- What is Data Quality?

- Why is it Important?

►IMA

- IMA Defined

- IMA Members

- COMPASS and the IMA

►Accomplishments and Next Steps

- Accomplishments to Date

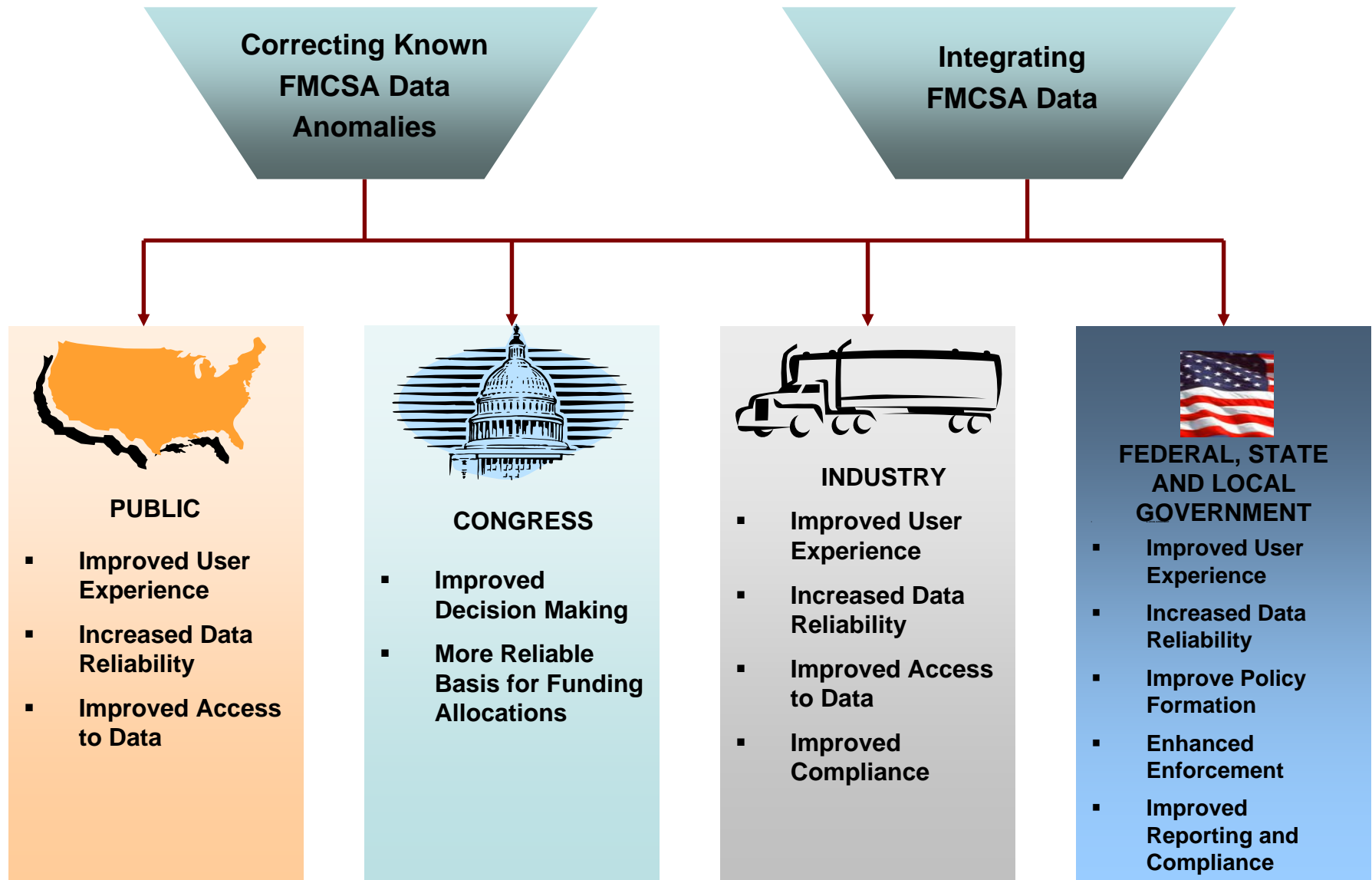- What's Next?

Data Quality

What is Data Quality?

Data Quality Attributes	Description
Accessibility	Data are easily accessible, understandable and useable
Accuracy	Data represent reality or a verifiable source
Completeness	All necessary data are present
Consistency	Data elements are similarly defined and normalized between systems
Integrity	Data structure and relationships among entities are consistently defined and maintained
Security	Data are safe from unauthorized access and alteration
Timeliness	Data are available when needed and perform within any latencies as defined in the system or policy requirements
Validity	All data values fall within acceptable ranges as defined by the system requirements

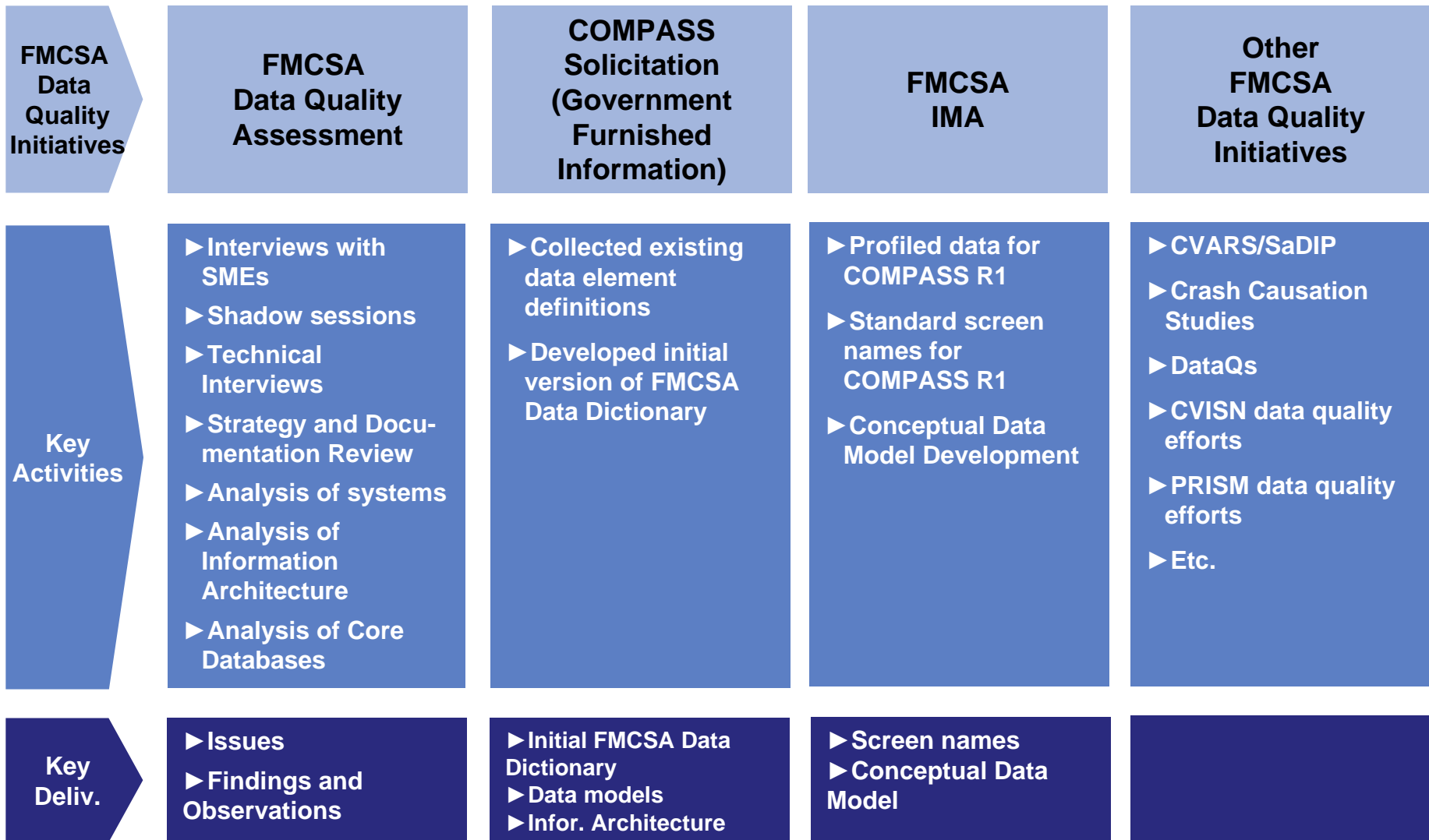*In other words—the right data,
in the right place, at the right time*

Why is Data Quality Important?

► FMCSA can only realize its mission if the data are reliable

► Data quality is a critical success factor for COMPASS

► Growing demand for operational efficiency

► Provides effective data quality exchange requirements with other entities (internal and external)

Benefits of Data Quality

Correcting Known FMCSA Data Anomalies

Integrating FMCSA Data

PUBLIC

- Improved User Experience
- Increased Data Reliability
- Improved Access to Data

CONGRESS

- Improved Decision Making
- More Reliable Basis for Funding Allocations

INDUSTRY

- Improved User Experience
- Increased Data Reliability
- Improved Access to Data
- Improved Compliance

FEDERAL, STATE AND LOCAL GOVERNMENT

- Improved User Experience
- Increased Data Reliability
- Improve Policy Formation
- Enhanced Enforcement
- Improved Reporting and Compliance

FMCSA Data Quality Initiatives

FMCSA Data Quality Initiatives	FMCSA Data Quality Assessment	COMPASS Solicitation (Government Furnished Information)	FMCSA IMA	Other FMCSA Data Quality Initiatives
Key Activities	▶ Interviews with SMEs ▶ Shadow sessions ▶ Technical Interviews ▶ Strategy and Documentation Review ▶ Analysis of systems ▶ Analysis of Information Architecture ▶ Analysis of Core Databases	▶ Collected existing data element definitions ▶ Developed initial version of FMCSA Data Dictionary	▶ Profiled data for COMPASS R1 ▶ Standard screen names for COMPASS R1 ▶ Conceptual Data Model Development	▶ CVARS/SaDIP ▶ Crash Causation Studies ▶ DataQs ▶ CVISN data quality efforts ▶ PRISM data quality efforts ▶ Etc.
Key Deliv.	▶ Issues ▶ Findings and Observations	▶ Initial FMCSA Data Dictionary ▶ Data models ▶ Infor. Architecture	▶ Screen names ▶ Conceptual Data Model	

Information Management Authority

Key IMA Drivers

► **FMCSA data is a critical business resource and it requires the involvement of Business and IT**

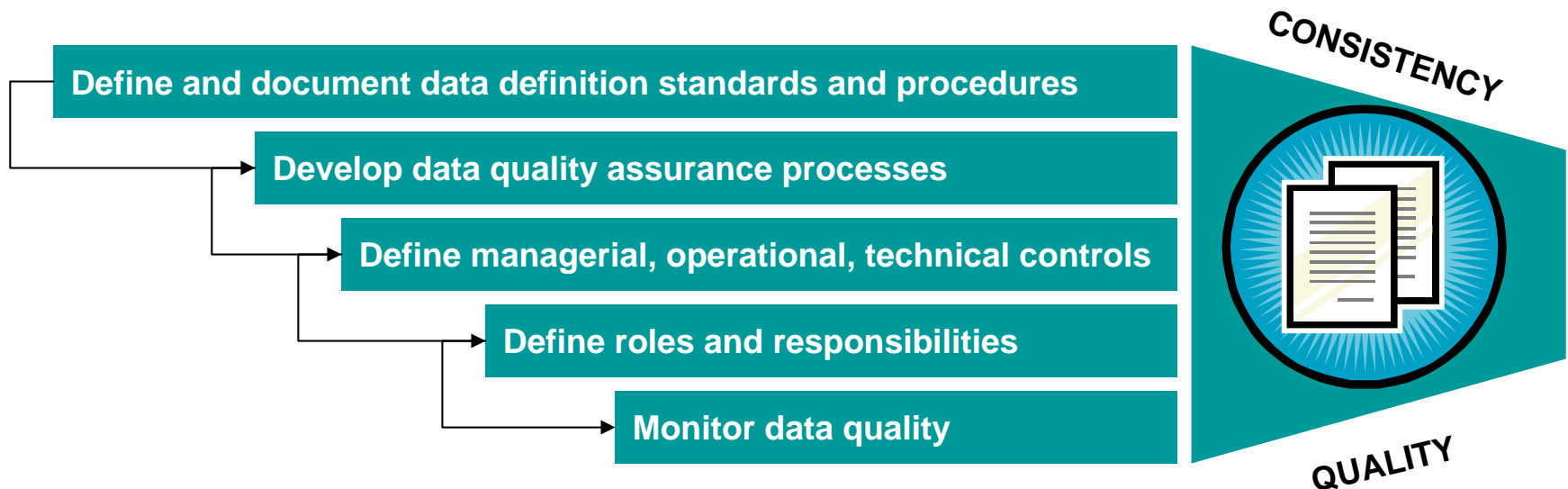► **FMCSA data requires a strategy, program, and plan to manage and ensure an acceptable level of data quality**

Key Drivers For

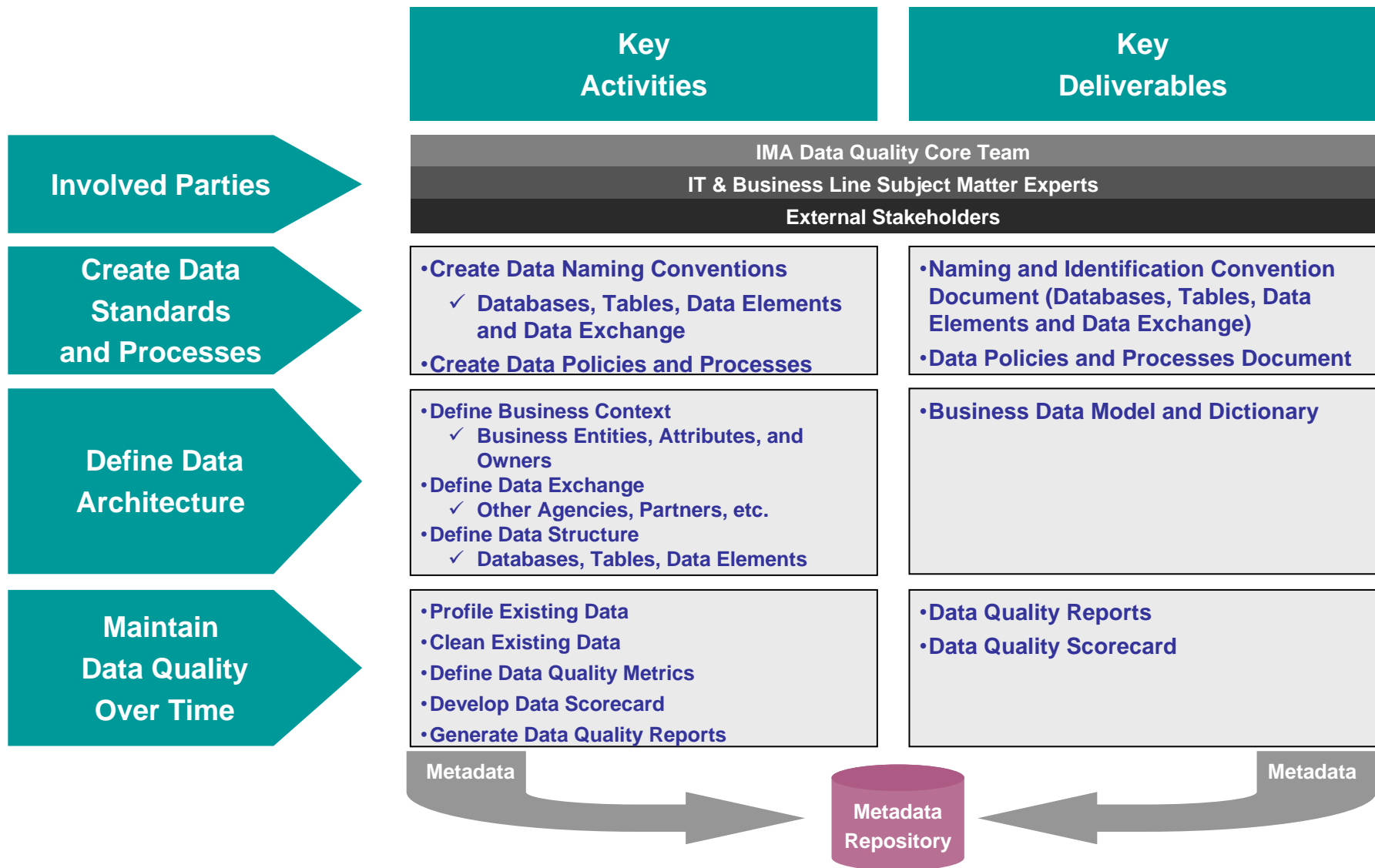**FMCSA Information Management Authority (IMA)**

The Information Management Authority (IMA) is an organizational entity that manages a program to promote and monitor industry best practices for data quality and data management throughout the organization

To ensure that FMCSA data are accurate, complete, available, consistent, properly structured, accessible, secure, timely, and at an acceptable level of quality to support the FMCSA mission and goals.
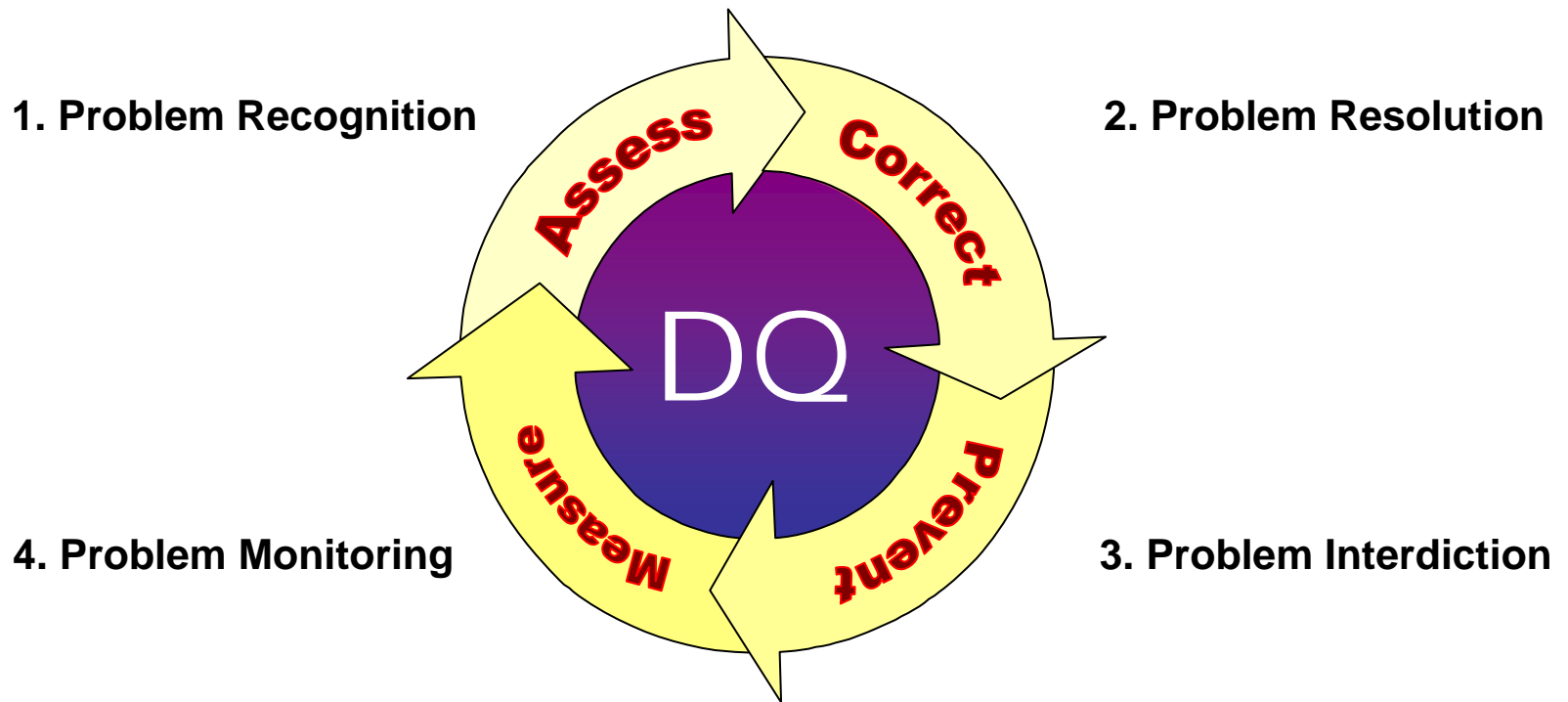

- Define and document data definition standards and procedures
- Develop data quality assurance processes
- Define managerial, operational, technical controls
- Define roles and responsibilities
- Monitor data quality

CONSISTENCY

QUALITY

IMA Approach

	Key Activities	Key Deliverables
Involved Parties	IMA Data Quality Core Team IT & Business Line Subject Matter Experts External Stakeholders	
Create Data Standards and Processes	• Create Data Naming Conventions ✓ Databases, Tables, Data Elements and Data Exchange • Create Data Policies and Processes	• Naming and Identification Convention Document (Databases, Tables, Data Elements and Data Exchange) • Data Policies and Processes Document

Define Data Architecture	• Define Business Context
	  ✓ Business Entities, Attributes, and Owners
	• Define Data Exchange
	  ✓ Other Agencies, Partners, etc.
	• Define Data Structure
	  ✓ Databases, Tables, Data Elements
		• Business Data Model and Dictionary

Maintain Data Quality Over Time	• Profile Existing Data • Clean Existing Data • Define Data Quality Metrics • Develop Data Scorecard • Generate Data Quality Reports	• Data Quality Reports • Data Quality Scorecard

Metadata → Metadata Repository ← Metadata

IMA Results

1. Problem Recognition

2. Problem Resolution

4. Problem Monitoring

3. Problem Interdiction

IMA Members

IMA Coordinator

Deputy CIO

Office of Information Technology
► Development Division
  ▪ Legacy Systems
  ▪ COMPASS
  ▪ DBA
  ▪ ISSO
► Operations Division
  ▪ Technical Infrstr.
► PM Division

Office of Research and Analysis
► Analysis Division
► Technology Division

Office of Management Information and Services
► Management Information and Directives

Office of Safety Programs
► State Programs Division

Office of Enforcement and Compliance
► Enforcement and Compliance Division

Office of Policy Plan and Regulations
► Regulatory Development Division

Office of Bus and Truck Standards and Operations
► Driver and Carrier Operations Division

Field Offices
► Service Centers
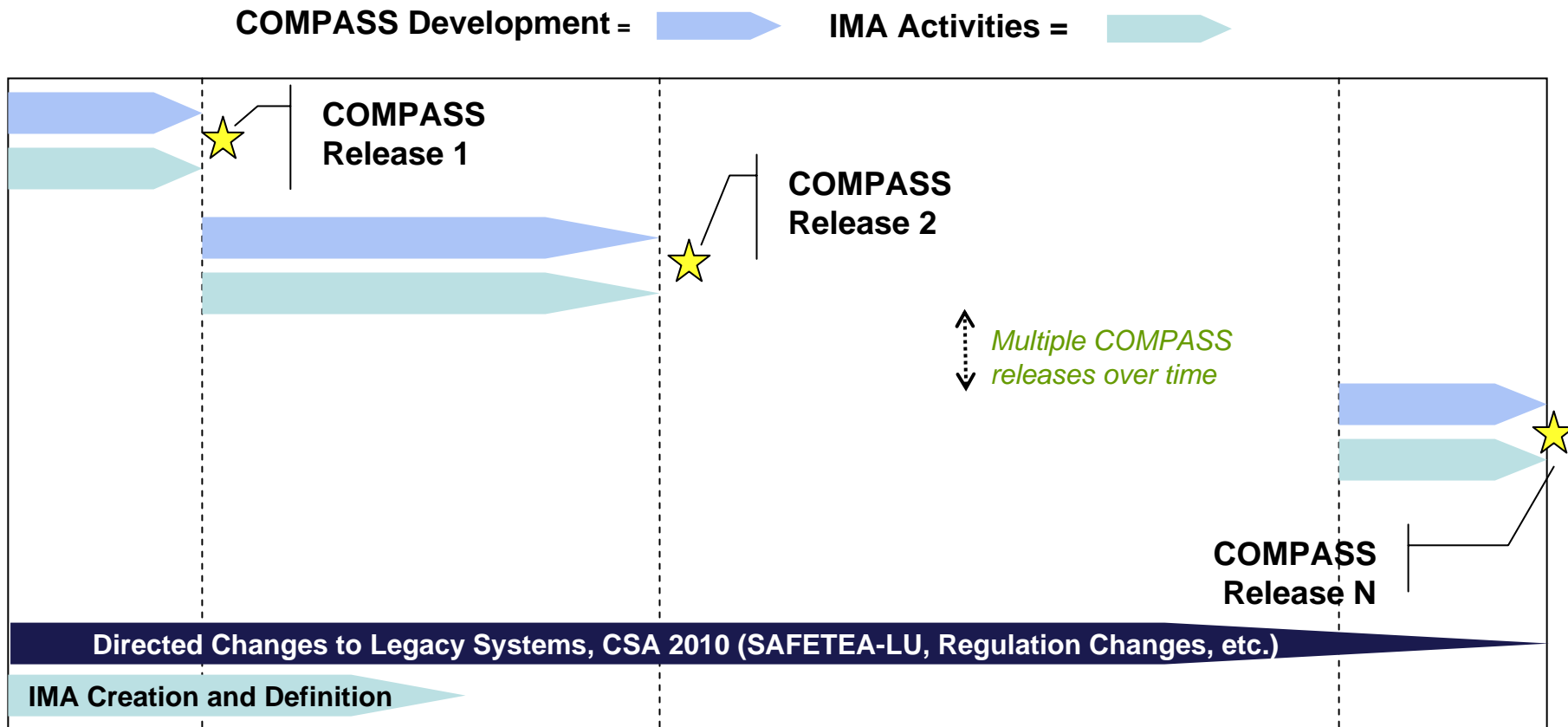► Division Offices

CSA 2010

IMA Data Quality Core Team

External SMEs
► Commercial Vehicle Safety Alliance (CVSA) Information Systems Committee
► Industry Association

F M C S A - w i d e   a n d   S t a k e h o l d e r   P a r t i c i p a t i o n

COMPASS and the IMA

▶ The FMCSA IMA implementation is a multi-year effort that involves Business and IT

▶ Incremental IMA implementation approach to balance short- and long-term goals

▶ IMA activities will be planned to support the COMPASS Roadmap

COMPASS Development =

IMA Activities =

COMPASS Release 1

COMPASS Release 2

Multiple COMPASS releases over time

COMPASS Release N

Directed Changes to Legacy Systems, CSA 2010 (SAFETEA-LU, Regulation Changes, etc.)

IMA Creation and Definition

Accomplishments and Next Steps

► Established the FMCSA IMA

► Held first meeting of all members February 24, 2006

► Profiled data elements for COMPASS Release 1

► Developed FMCSA IMA Charter and Concept of Operations

► Working with COMPASS to develop FMCSA Conceptual Data Model

► Standardizing screen names for COMPASS Release 1

FMCSA Conceptual Data Model (CDM)

► Business-driven view of the types of information used by FMCSA

► Identifies the functions performed by FMCSA

► Describes how the types of information relate to each other

FMCSA Business Process

- ►Registration
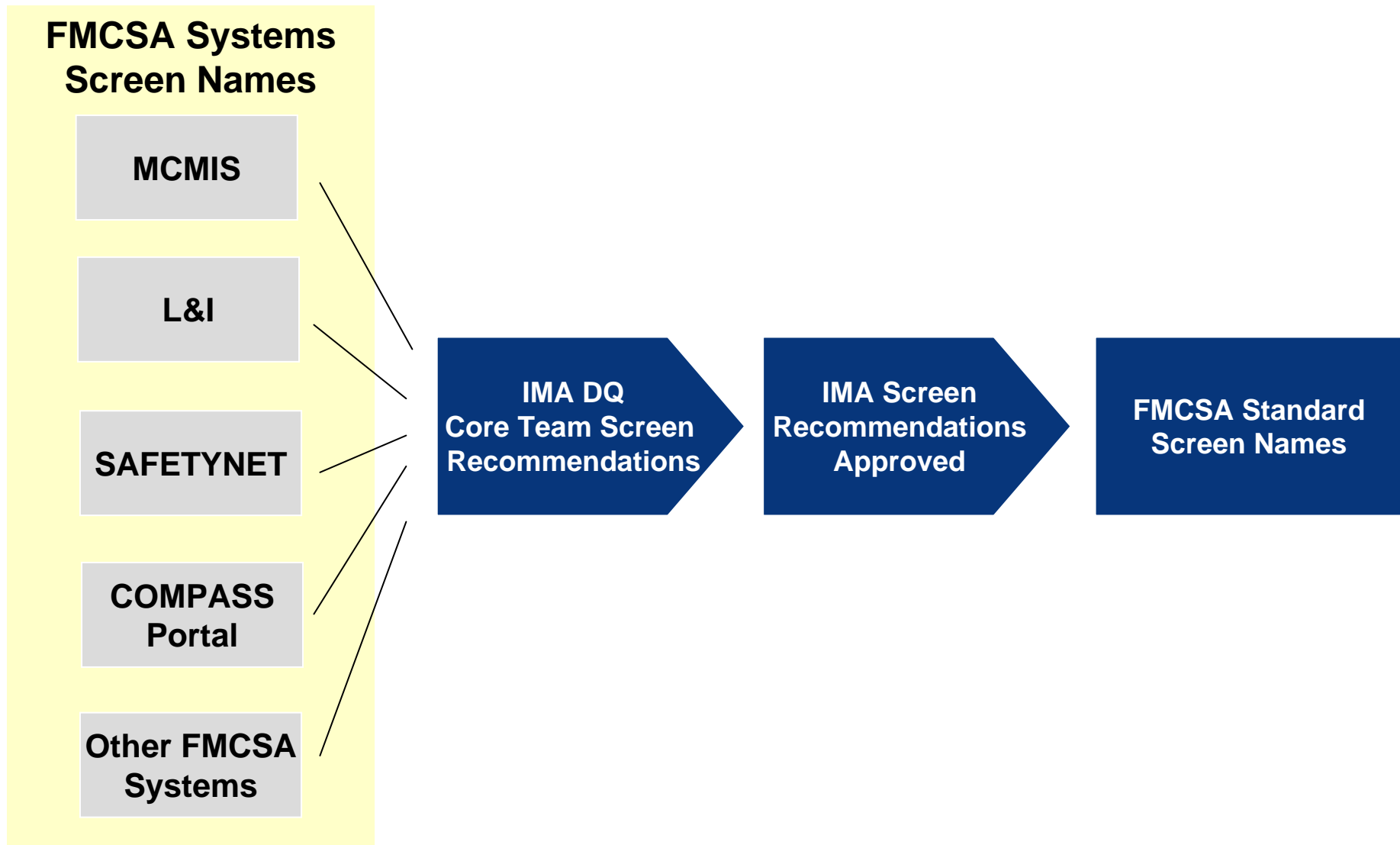- ►Inspection
- ►Compliance Review
- ►Case Enforcement
- ►Etc.

FMCSA Information Needs

Carrier

Vehicles

What's Next?

► Complete the initial FMCSA Conceptual Data Model

► Standardize screen names for COMPASS Release 1

► Support data quality requirements for COMPASS Release 2

- Standards

- Data quality assessment

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